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INSECT FOOD OF THE BLACK BEAR (URSUS AMERICANUS).

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During the summer of 1921 the writer of this article was studying the Plankton of Lake Nipigon, Ont., and collecting insects during his spare time. While searching for insects in the bush many opportunities were presented for observing the habits of wild life under natural conditions. Not the least interesting of these observations were those concerning the Black Bear (*Ursus americanus*).

On the afternoon of August 22 Duncan Bell, a missionary to the Ojibway Indians of that vicinity, and myself saw a black bear in the bush about one mile south of Grand Bay. The animal was a small one, only one-third grown, and was walking along a moose trail at a leisurely pace. We walked along the trail in the direction opposite to that taken by the bear and found that the creature had been making a meal off a nest of yellow-jackets only a few minutes previously. Within a very few feet of the spot where we saw the bear we found the evidences of his repast. The animal had eaten paper, larvae and adults as well. All that was left was a hole in the ground beside the trail with about half a dozen very angry hornets flying around it. Within fifty feet of this we found where another nest of these insects had been destroyed. In both instances a few of the hornets were still flying about. They proved upon capture to be *Vespula diabolica* De Saussure.

In this same vicinity we found the dung of this or a similar sized bear. This material was apparently a day or two old and was composed of the remains of hundreds of adult hornets some of which were in a good enough state of preservation to be readily identified. Both *Vespula diabolica* De Saussure and *Vespula consobrina* De Saussure were present.

At this point it may be well to notice what others have to say concerning the bears' fondness for hornets. Lockwood[1] tells us in the Riverside Natural History that "Bears like the larvae of wasps' nests. Such a nest in the ground they will scratch up, digging with much rapidity, but often having to stop from the stings of the enraged insects. They will snarl and roll on the ground and go at it again. Although the punishment is severe Bruin keeps at it until he has secured his hard earned prize."

Ernest Thompson Seton[2] says that "A pleasing variation of late summer foods is found in the nests of several species of wasps as well as of wild bees."

[1]Samuel Lockwood, The Riverside Natural History, Vol. V, p. 378.
[2]Ernest Thompson Seton, Life Histories of Northern Animals, Vol. II, p. 1082, 1083.

He also states that "According to Merriam the bear digs out the nests of the yellow-jackets devouring both the wasps themselves and the comb containing their honey and grubs."

Bears are very fond of tearing decayed stumps and logs to pieces in search of beetle larvae and ants' nests. Remains of their handiwork were found almost every day in the bush. The thoroughness of their search is attested by the minute fragments into which the wood is clawed. The bears' fondness for ants is well known to the Indians, trappers and fishermen of Lake Nipigon.

Professor B. A. Bensley of the University of Toronto has made an interesting observation concerning the bears' fondness for ants. He opened the stomach of a small bear which he had killed near Go Home River, Georgian Bay, about the middle of July, 1911, and found it to contain at least a quart of ant pupae. He says that the pupae alone constituted by far the greater part of the material although a few adult ants and small bits of wood were present. This was at a time when the animal could have secured plenty of blueberries if it had chosen to do so.

Ernest Thompson Seton[2] gives us the following interesting information as to the black bears' fondness for ants. "Throughout the summer all kinds of insects and especially ants are important bear food."

"In the sand hills about Carbury, in the woods about Lake Winnipegosis, throughout the Bitter root mountains of Idaho and in the ranges of the upper Yellowstone as well as in the Rockies of the Colorado and the Low Laurentians of the Ottawa I have found that ants' nests furnished the bear with an important article of food."

"Following the trail of one I have found that it invariably turned over every log and flat stone that it came to and ripped open every rotten log and stump in its search for insects, the greater part of which must have been ants. Among the Bitter root mountains I have in a single day passed hundreds of these demolished logs and stumps."

"In the Adirondacks according to Merriam, the black bear delights in tearing up old logs and stumps in search of the ants that make their homes in such situations."

"While fishing in the North Bay of Big Moose Lake during the summer 1881 Mr. Harry Burel Miller of New York City heard a bear tearing down an old stump that stood on a point in the bay. His guide, Richard Crego, noiselessly paddled him to the spot and he killed the bear with one ball from his rifle. Its stomach contained about a quart of ants and their eggs."

Stone and Cram,[3] after telling of the bears' fondness for berries of many kinds, particularly blueberries, says that "They also dig for roots and bugs and catch grasshopers and crickets in the grass. When there is plenty of such to be had they will, it is said, pass the newly killed carcass of a deer or sheep without noticing it."

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[3]Stone and Cram, American Animals, p. 258.

A REVISION OF THE NORTH AMERICAN SPECIES OF MORDELLA RELATED TO M. MELAENA. (COLEOPTERA).

BY EMIL LILJEBLAD,
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In the course of the writer's detailed study of the American Mordellidae, in which he has had the opportunity of examining many hundreds of specimens of the genus *Mordella,* it has become apparent that the species comprising the *melaena* group are insufficiently distinguished by the brief diagnoses heretofore published. This is notably true of *M. melaena* and *M. atrata* (*"scutellaris"*), which the writer has found more or less confused in nearly every collection examined.

Five species of this group are recognized from eastern North America, namely *quadripunctata, melaena, atrata, lecontei,* and a new species, *M. knulli,* from Florida. Of the five characteristically western species here discussed, four are described as new, and the fifth, *M. signata,* is recorded for the first time from the United States.

1. *Mordella signata* Champion.[1]

The two specimens at hand, identified as of this species, are the first to be recorded north of Middle America. Both were taken in New Mexico, one in Socorro County, by Mr. W. J. Gerhard (deposited in the Field Museum of Natural History), the other at Del Labo (in the writer's collection). These two differ slightly from the types as originally described, but as Champion cites two "variations," one from Mexico, it seems probable that these slight variations in coloration are not of specific significance.

This is a large and well-marked species.

Form cuneate. Head black, with cinereous pubescence; prothorax black, with yellowish cinereous pubescence becoming denser on the sides; elytra with the ground color ferruginous, darker toward the apex, marked with a rather broad oblique line from the humeral angle downward one-third length of elytra to near the suture, then forward along the suture to base, and also with an equally broad transversely lunate mark on the disc beyond the middle elytra, with yellowish-cinereous pubescence. Anal style short, bluntly rounded at apex. Length, 8 mm. to end of elytra, 10 mm. to end of anal style.

2. *Mordella quadripunctata* Say.

This, one of our largest species, is rather rarely found in collections. The writer, however, has been able to examine specimens from many localities—Maine, Canada, Virginia, West Virginia, Iowa, Kansas and Colorado. In some specimens, particularly males, the subsutural spots are but faintly indicated. The presence of the two pair of spots, however, best distinguishes this form from *melaena* and *atrata;* it is, furthermore, more robust and usually longer.

Body cuneiform, robust. Color black, entirely covered with sericeous-brownish-cinereous pubescence, more coarsely on the head and thorax than on the elytra; scutellum with silvery-white pubescence; elytra each with two cinereous-argenteous spots, rather beyond the middle, the larger exterior and somewhat linear, the smaller one obsolescent, subsutural, near the base; lower

[1]Biol. Cent. Am., IV, 2, 1891, p. 276.

parts with argenteous pubescence at the sides of the abdominal segments. Head minutely punctured. Last joint of the maxillary palpi scalene-triangular, the inner side a little longer than the apical. Antennae short, reaching middle of thorax; the four first joints small; the fifth to eleventh clavate; third and fourth joints about equal in length; fifth a little longer than the sixth and nearly twice as wide at apex; sixth to tenth about equal in length, clavate, forming an elongated club; eleventh one-third longer than the tenth, tapering to apex. Eyes moderately large, finely granulated. Prothorax one-third wider than long, very little broader than the elytra at base, evenly rounded and converging to apex, the hind angles obtuse; its surface finely punctured; base of prothorax broadly rounded in front of the triangular scutellum. Elytra more coarsely punctured, with two faintly indicated costae extending from base to slightly beyond the middle. Anal style short, stout, truncate at tip. The inner edges of the femora of the anterior legs bear long setae in the male, only fine pubescence in the female. Length to end of the elytra, 6-7 mm.; to tip of the anal style, 7-8 mm.

3. *Mordella melaena* Germar.[2]

Mordella melaena is also one of our rarer species, being usually found singly. Specimens have been seen by the writer from Canada, Maine, Massachusetts, New York, Virginia, Michigan, Illinois and Iowa; it has been recorded further from Pennsylvania, Georgia, Tennessee, Ohio and Colorado. This species appears most closely allied to *M. quadripunctata*, but may readily be distinguished from it, as indicated above in the account of that form. Care must be taken to avoid confusion of this species with *M. grandis*, which it closely resembles; in that species however, the antennae are much longer, more serrate, and less clavate, and the suture has more or less silvery pubescence. The same characters also differentiate *melaena* from two smaller western species, *albosuturalis* and *hubbsi*. The best character by which *melaena* may be separated from *atrata* is the form of the antennae, which are more clavate, the outer joints being more dilated and compact, rather than serrate; further, the scutellum is more sharply triangular, and the anal style is always short and blunt at the tip, not long and slender.

Form robust cuneiform. Color black, the upper surface entirely covered with fine sericeous-brownish-cinereous pubescence (nearly black in some specimens); base of the anal style with cinereous pubescence; lower parts black, with cinereous-argenteous pubescence at the sides of the abdominal segments. Head comparatively large, minutely punctured. Last joint of the maxillary palpi scalene-triangular, more rounded on the inner angle in the female than in the male. Eyes moderately large, finely granulated, rounded in male, more oval in the female. Antennae with first to fourth joints slender; fifth to eleventh strongly serrate, or nearly clavate, forming an elongated club; third joint a little longer than the fourth, which is a little the broader at apex; fifth one-fourth longer than the sixth; sixth to tenth equal in length; eleventh longer than the tenth, triangular, rounded on the inner and apical angles. Prothorax one-third wider than long, rather finely punctate, widest little before the base, evenly

[2]Ins. Spec. Novae, Halle, XXIV, 1824, p. 169.

rounded and converging to apex; its base at middle, in front of the triangular scutellum, broadly rounded. Elytra a little narrower at base than thorax, the sides at middle slightly sinuate, and tapering to apex. Anal style short, and rounded at tip. Length to end of the elytra 5-6.5 mm., to tip of the anal style 6-7.5 mm.

4. *Mordella atrata* Melsheimer.

This is the species which has ordinarily been named *Mordella scutellaris*. But since Fabricius[3] states in the original description of *scutellaris* that the head and thorax are ferruginous, or rusty-red (*Caput et thorax ferrugineo paullo nitidula*) and the elytra black, and gives as the type-locality South America, whereas in the present North American species the color is wholly black, with gray or brownish pubescence, the writer can not agree in regarding as available the name *scutellaris*. The oldest tenable name for the North American species here discussed appears to be *Mordella atrata*[4] for it best agrees with Melsheimer's original account of *atrata*. Numerous specimens have been examined from Canada, Maine, Connecticut, Pennsylvania, Vermont, Massachusetts, New York, New Jersey, Maryland, North Carolina, Colorado, Florida, Tennessee, Michigan, Ohio, Indiana, Illinois, and Iowa.

Body cuneiform, more robust in female than male. Color black; the pubescence of the upper surfaces brownish or very slightly cinereous; of the scutellum cinereous; of the lower parts brownish, sometimes nearly black; sides and anterior margin of the abdominal segments and base of the anal style with sericeous-cinereous hairs. Last joint of the maxillary palpi scalene-triangular in the male, the inner angle rounded in the female. Antennae with joints one to four slender; fifth to tenth serrate; third joint a little longer than the fourth; the fifth, triangular, one-third longer than the third and twice as broad at apex; sixth, one-third shorter than the fifth; seventh to tenth of uniform width, serrate, about as broad as long; eleventh constantly very little longer than the tenth and rounded on inner side. Eyes moderately large, and rounded (particularly in males). Prothorax a little broader than the elytra at base, widest little before the base, then evenly rounded to apex. Scutellum broadly rounded at tip. Anal style rather long, gradually pointed and about one-third longer than thorax. In some specimens from Maine and Massachusetts the anal style is a little shorter and broader at base, tapering abruptly to the middle, then maintaining its width to the apex. Length to end of the elytra 3.5-4.5 mm., to end of the anal style 5.5-6.5 mm.

5. *Mordella lecontei* Sciki.[5]

This apparently valid species has passed currently, under the preoccupied name of *M. irrorata* LeConte[6], as a synonym of *Mordella "scutellaris"* (=*atrata*). It differs markedly from that species, to which it is doubtless closely related, in color. The head and thorax are rather closely covered with black and brownish or grayish brown pubescence, the elytra with black pubescence, sparing-

[3]Syst. Eleuth. II, 1801, p. 123.
[4]Proc. Acad. Nat. Sc. Phila. II, 1846, p. 313.
[5]Junk, Col. Cat. pars 63, 1915, p. 23.
[6]Proc. Acad. Nat. Sci. Phila., XIV, 1862, p. 46. Trost, Kleine Beytr. 1801, p. 27. Sturm, Cat. 1843, p. 170.

ly but conspicuously sprinkled with single shining cinereous, or sometimes brown, hairs. This species appears to be particularly abundant in Pennsylvania and Maryland. Other specimens have been examined from Massachusetts, Maine, Georgia, West Virginia, Ohio, Indiana, Illinois, Wisconsin, Iowa, North Carolina and Texas.

Body cuneate. Head and thorax rather closely covered with black and brownish or grayish-brown pubescence. Elytra with black pubescence, sparingly sprinkled with single shining-cinereous, or sometimes brown, hairs. Otherwise the species resembles *Mordella atrata*.

6. **Mordella albosuturalis,** sp. nov.

This species somewhat resembles *Mordella atrata,* from which it differs in having silvery pubescence along the base and suture of the elytra, and the outer joints of the antennae slightly tapering to apex. It seems only to occur in the western States. It has been taken on flowers of *Heteromela arbutifolia* and several composites.

Body cuneiform, the male usually narrower than the female. Color black, with fine reddish brown pubescence; basal margin of thorax and elytra, the scutellum and elytral suture with argenteous pubescence; under-parts with cinereous pubescence, most dense on the sides and anterior margins of the ventral segments. Last joint of the maxillary palpi scalene triangular in the male, the inner angle more rounded in the female. Antennae with joints one to four slender; the fifth to tenth joints serrate; the third and fourth equal in length, the fourth the widest; fifth about equal in length to the fourth, but one-third broader at apex, with sides straight; sixth to tenth serrate, with inner sides rounded, the sixth broadest; those following diminishing slightly in width to the tenth; eleventh joint one-third longer than the tenth, more oval in shape. Eyes elongate-rounded or egg-shaped, sinuate on the upper side near the antennal cavity in the male (this sinuation nearly obsolete in the female). Prothorax very little wider than the elytra, broadest near the base, then evenly rounded to apex, its base in front of scutellum broadly rounded. Scutellum triangular, rounded at apex, in the male usually a little narrower than in the female; anal style long, gradually tapering in the male, wider and more abruptly tapering to middle in the female. Length to end of elytra 4-5 mm., to tip of anal style 5.5-6 mm.

Several hundred specimens have been examined from California, and some from Oregon, Nevada, Idaho, Montana and North Dakota. The male holotype and female allotype is from Callistoga, near Mt. St. Helena, California, collected on July 14, by C. L. Hubbs. Paratypes were collected by Mr. Hubbs at the type locality, and at the following other localities, all in California; Mt. Diablo, July 18; Blue Lakes, July 12; Carmel, June 18; Jamul, San Diego County, June 10, and Healdsburg, July 10. Other paratypes from California are as follows: Tule River, July 30 (F. S. Daggett); Mariposa Co., June 2-17 (F. W. Nunenmacher); Paradise Valley, August 15 (J. C. Bradley); Paradise Valley, Kings River, July 15 (R. L. Beardsley); Sugar Pine, Madera Co., August 24-31 (J. C. Bradley); Hockett Meadow to Sequoia National Park, July 25; Los

Gatos Canyon, Fresno Co., June 6-8 (J. C. Bradley); Felton, September 6 (J. C. Bradley); Switzers Trail, St. Gabriel Mt., July 10-11 (Fordyce Grinnell, jr.); Camp Baldy, Los Angeles Co., July 28 (L. L. Muckmore); Mt. Lowe, June; Tulare Co., July 30; Raymond, May; Palmas Spring, May 29 (C. A. Frost, collection); Giant Forest, Sequoia National Park, July 21-26 (J. C. Bradley); Sherwood, Mendocino Co., July 1 (Cornell University Collection). Still other paratypes are from Josephine Co., Oregon (June 11, F. W. Nunenmacher); Esmaralda Co., Nevada (June 29, F. W. Nunenmacher); Troy, Idaho, (August 16, Wm. Mann); Glen, Montana, (C. C. Adams); and Bottineau, North Dakota, (August 1, T. H. Hubbell).

7. **Mordella hubbsi**, sp. nov.

This species differs from the other black forms of the genus in the ferruginous color of the femora of the posterior and middle legs, and can easily be distinguished by this character. All of the known specimens have come from California.

Cuneiform, especially in the male. Color iridescent black; head and thorax with sericeous-cinereous pubescence; elytra with fine reddish-brown pubescence; basal margin of thorax, scutellum and elytral suture with argenteous pubescence; under-parts with cinereous pubescence, becoming more silvery at the sides of mesosternum and abdominal segments; mouth-parts and femora of the anterior and middle legs ferruginous to near the knee; antennae dull red at base; last joint of the maxillary palpi scalene-triangular in male, more rounded on the inner angle in the female. Antennae with joints one to four narrow; the fifth to tenth serrate; third joint one-third longer than the fourth; fifth to tenth, as wide as long, the fifth broadest, the sixth to tenth slightly decreasing in width; eleventh little longer than the tenth, oval. Eyes rather large, rounded and sinuate in front in the male, more oval or egg-shaped, with scarcely any sinuation in the female. Prothorax much wider than the elytra at base, widest basally and evenly rounded, converging to apex; its base in front of scutellum broadly rounded. Scutellum triangular, rounded at tip. Anal style long, blunt at tip, about one half as long as the elytra. Length to end of the elytra, 3.5-4.5 mm.; to tip of the anal style 5-6 mm.

Forty-five specimens examined. The male holotype and female allotype, from Carmel, California, were collected on June 18, by C. L. Hubbs. Paratypes are from same place, and from Switzer's Trail, St. Gabriel Mt., California (June 10-July 14, Fordyce Grinnell, jr.); Tulare Co., California (July 30, C. A. Frost); Long Canyon, California, June 3; Mariposa Co., California (June 5-17, F. W. Nunenmacher); Paradise Valley, Kings River, California (July 15-18, R. L. Beardsley); Kenworthy, California (June 8, C. A. Frost); Sherwood, Mendocino Co., California (July 1, Cornell University collection); Three Rivers, Giant Forest, Tulare Co., California (July 16, J. C. Bradley); Coalinga, Fresno Co., California (June 1-3, J. C. Bradley); Camp Baldy, Los Angeles Co., California (July 28, L. L. Muckmore); Los Gatos Canyon, Fresno Co., California (June 6-8, J. C. Bradley); Raymond, California (May), and St. Gabriel Mt., California (June 5, C. A. Frost, collection).

This species I dedicate to my friend, Carl L. Hubbs, from whom I have received many rare specimens and other assistance, and I hope may be considered a valid species for all time.

8. **Mordella grandis,** sp. nov.

This species might readily be confused with *Mordella melaena,* on account of its size and general appearance. It can best be separated from that species by the form of the antenna, which is longer, more narrow (not clavate), and slightly tapering to apex from the sixth joint, and by the silvery sutural line, and the longer and more narrow anal style. It is also closely allied to *albosuturalis,* but is more robust, the antennae are longer, and the scutellum is more triangular.

A rather large species, of cuneate form. Color black; pubescence of the upper surfaces very fine, sericeous black, with cinereous or brownish hairs intermixed; scutellum and elytral suture with argenteous pubescence; lower parts cinereous, the sides of breast and abdominal segments more strongly argenteous pubescent. Last joint of the maxillary palpi scalene-triangular in male, more rounded on inner angle in the female. Antennae with joints one to four narrow, the fifth to tenth serrate; the third slightly longer than the fourth, which is a little wider at apex; fifth to tenth, each a little longer than broad, the sixth widest; the following joints slightly diminishing in width to the tenth; eleventh longer than the tenth, oval in shape in the male (in the female the fifth joint is a little longer than the sixth, the sixth to tenth are about as wide as long). Eyes in male large, rounded, sinuate in front; in the female, more oval in shape, and less sinuate. Prothorax wider than long, considerably wider than the elytra at base, widest near the base, and evenly rounded to apex, hind angles subacute, the base in front of scutellum broadly rounded. Scutellum large and triangular, more pointed in female than the male. Anal style as long as the thorax, truncate at tip. Length to end of the elytra 4-5.5 mm.; to tip of the anal style 6-7 mm.

Eighteen specimens examined from California and Oregon. The male holotype and female allotype are from Mariposa County, collected on June 5, by F. W. Nunenmacher. The paratypes are from same place, and from Tulare Co., California (July 30, C. A. Frost); Long Canyon (June 3); Los Gatos Canyon, Fresno Co., California (June 6-8, J. C. Bradley); Sherwood, Mendocino Co., California (July 1, Cornell University collection); Camp Baldy, Los Angeles Co., California (July 28, L. L. Muckmore); Paradise Pk., Kings River, California (July 18, R. L. Beardley); Sonoma Co., California (Cornell University); Kaweah, California (R. Hopping); and Pendleton, Oregon.

9. **Mordella brevistylis,** sp. nov.

This species somewhat resembles *Mordella atrata,* but is readily distinguishable by its more elongate form and the shorter, blunt anal style.

Form subcuneiform. Color black; both upper and lower surface with black or dark reddish-brown pubescence; sides of breast, and first and second abdominal segments at sides with cinereous pubescence. Last joint of maxillary palpi scalene-triangular. Antennae short, reaching to about middle

of thorax. Antennal joints one to four narrow, the fifth to tenth segments serrate; the third and fourth equal in length, the fourth widest; sixth to tenth about as wide as long, nearly alike in shape; the fifth with the sides straighter; the eleventh oval, a little longer than the tenth. Eyes large, rounded, very little or not at all sinuate in front. Prothorax very little wider than the elytra at base, one-fourth wider than long, widest a little before the base, then evenly rounded to apex; base of thorax in front of scutellum nearly truncate or very slightly emarginate. Scutellum triangular, broadly rounded at apex. Anal style short, shorter than the thorax, and blunt at tip. Length to end of the elytra, 4.25 mm.; to end of the anal style, 5.25 mm.

Four specimens examined, presumably females, from New Mexico, labelled Cornell University, Crew Collection. The type is deposited in the Cornell University collection; paratypes are in the possession of the writer.

10. **Mordella knulli,** sp. nov.

This large and very interesting new species of Mordella is known from only one specimen, presumably a female, collected on June 20, at La Belle, Florida, by Mr. J. N. Knull, to whom it is dedicated. It is entirely different in markings from any other North American form of the genus, differing particularly in the distinct silvery pubescent markings on the whole upper surface. On account of its size, it is suggested that this species be placed in taxonomic sequence after *Mordella quadripunctata.*

Cuneiform. Ground-color black. Head densely covered with fine argenteous pubescence, except on a large median triangular spot, where the pubesence is less dense, showing through the black ground color; antennae and palpi black; eyes dull yellowish, transparent, with ocelli and margin black; prothorax with all the margin, except the median third of the apical margin, an angulated band, one third from apex, reaching the side margins, a streak in the middle from apex downward to the middle band, and a streak each side the middle, from the middle band downward not quite reaching the base, with argenteous pubescence (leaving five large spots with black pubescence); scutellum with argenteous pubescence; elytra each with a curved band, from the scutellum outward and downward to about one-third from the base, and then extended outward to the side margin, (leaving a somewhat cordate back spot in the middle of the two elytrons, and a somewhat elongated black spot at the humeral angle) a round spot on each elytron in the middle, very close to the suture, a sutural streak from near the base, slightly widened to one fourth from apex, where it is connected with an oblique triangular band, which reaches the margin, with argenteous pubescence, for the rest covered with black pubescence; under parts black, densely covered with argenteous pubescence, except for a black spot on the posterior margin on the sides of meso and metasternum; a similar denuded spot near the hind coxal plate, and the posterior side margin of the abdominal segments; legs with argenteous pubescence on femora and outer margin of tibiae and tarsi; anal style black, with a little argenteous pubescence near the base. Head rather large, somewhat triangular in shape, finely punctured; antennae

not reaching the base of thorax; joints one to four narrow; fifth to tenth serrate; third and fourth joints equal in length; fifth one-fourth longer than the fourth, and much wider at apex; sixth one-fourth shorter than the fifth; seventh to tenth about equal in length, slightly decreasing in width; eleventh a little longer than the tenth, rounded on the inner angle. Eyes large, obovate, finely granulated; maxillary palpi scalene-triangular. Prothorax one-third wider than long, finely punctured; basal lobe in front of scutellum broadly rounded; sides feebly rounded and converging to apex, the anterior and posterior angles acute; scutellum triangular. Elytra more than twice as long as wide, finely punctured. Tibia of the middle leg longer than all the tarsal joints of the same leg. Anal style long, pointed. Length to end of the elytra, 7.5 mm.; to tip of the anal style, 10 mm.; breadth, 3.5 mm.

The single type specimen is placed in the writer's collection as a gift from Mr. Knull.

SOUTH AMERICAN GLENURUS AND SOME OTHER MYRMELEONIDAE.

BY NATHAN BANKS,

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A striking new species of *Glenurus* from Bolivia has induced me to review the other species from South America, and I give below a synoptic table to all the forms except one recently described by Navas. Recently Mr. Petersen has furnished me with some photographs of certain types of Gerstaecker, and from these I learn that a species I had considered the *G. psilocerus* is not that but new.

1. Front wings without the large dark apical mark.....*heteropteryx.*
   Both wings with large dark apical marks.....2.
2. In the front wings the space before the apical mark contains many dark spots.....*croesus.*
   In front wing this space largely clear.....3.
3. Dark mark of hind wings with two pale spots.....*peculiaris.*
   Dark mark of hind wings with but one pale spot.....4.
4. In hind wing the apical pale spot is indented by the dark; the dark mark of fore wings has the inner edge lobed, and notched behind.....*incalis.*
   In hind wings the apical pale spot is not indented by the dark; the dark mark of fore wing is not lobed on the inner edge, and not notched behind.....*luniger.*

The *Glenurus discors* Navas agrees with *heteropteryx*, but is said to lack the white in hind wing at tip, and to have shorter hind wing; but this latter character is variable.

Glenurus incalis sp. nov.

In appearance and markings very near to *G. peculiaris.* The wings are rather more slender. The fore wings have the apical mark shaped like that of *G. peculiaris,* except that it is notched behind; the pale area beyond is more uniformly pale, with but two or three dark spots, of a milky and even faintly

pink appearance as in our *G. gratus*. The apical mark of the hind wing is fully as long as in *G. peculiaris*, but with only one pale spot behind, and the apical pale spot is indented by the dark from near tip. Body and legs marked as in *G. peculiaris*.

Expanse, 84 mm.

From Chachamayo, Peru, Nov.

Type, M. C. L., 12030.

Glenurus croesus sp. nov.

In general resembling *G. peculiaris*. The body is deep black, with a pale median line on the pronotum; the legs are yellowish, not dotted nor marked with dark, except that the tarsi are darker. The fore wings have the apical mark much as in *G. peculiaris*, lobed internally but less oblique; the pale band is not as much broken as in *G. peculiaris*. The space before the apical mark contains many dark spots, somewhat in rows, that near the end of the anal is very large and enlarged above.

The hind wings have the apical mark hardly as long as in *G. peculiaris*, with but one pale spot on the hind border, and that much narrowed behind. Wings rather shorter and broader than in *G. peculiaris*.

Expanse, 72 mm.

From the Province of Sara, Bolivia, 450 m.

Type, M.C.L., 12031.

Glenopsis petersensi sp. nov.

Pale yellowish; a black band below and one above the antennae; vertex with two dark submedian spots; antennae dark, annulate with pale, tip darker. Pronotum faintly marked with dark streaks each side, more or less connected with two submedian lines; thorax with pale and dark patches, not very clear; the scutelli with a pale median stripe; pleura with a few dark spots; abdomen with dark spot at base and tip of each segment, behind the dark more extensive. Femora with dark dots and apical bands, tibia with sub-basal and apical dark bands, tarsal joints dark at tips. Wings hyaline; venation mostly white, with some brown streaks and cross-veins; two small brown clouds near end of cubitus, and an oblique mark above end of the anal vein, the upper end the larger; some of the marginal forks brown, or with brown spots. In the hind wings some of the veins partly or wholly dark, no clouds; stigma of both pairs white. In structure very similar to *G. anomala*, but the hind wing is scarcely, if at all, longer than the fore wing.

Expanse, 83 mm.

From Chachamayo, Peru, Nov.

Type, M. C. L., 12044.

I had identified this as probably the *G. psilocerus* of Gerstaecker, but Mr. Petersen, to whom I sent a specimen, said that it is different, and kindly sent me a photograph of Gerstaecker's species, which is hardly more than a variety of *G. anomalus*.

Austroleon latipennis sp. nov.

Face pale, a dark indented mark below the antennae; vertex mostly brown, a faint pale transverse line in front, and about three pale spots behind; antennae brown, annulate with pale; pronutum with two broad brown submedian stripes; rest of thorax pale, with four rows of spots, or interrupted stripes; pleura with many dark marks; abdomen dark below, above pale, with a median dark line; legs pale, front femora above and tips of tarsal joints dark. Wings hyaline; veins pale, with dark spots at joinings of veins, gradates and marginal forkings brown; median vein plainly marked; hind wings much less marked, except subcosta and radius. The wings are very broad, especially toward the tip, as in *A. stictogaster,* and the tips acute and almost sinuate behind.

Expanse, 43 mm.

From Chapada, Brazil (H. H. Smith).

Type, M. C. L., 12032.

Differs from *A. stictogaster* in markings; related by marks to *A. argentinus,* but differs by very broad wings.

Hesperoleon tripunctatus sp. nov.

In general appearance very similar to *H. sackeni;* the abdomen has the same pale spots, but those on the posterior half are plainly longer and broken by dots and streaks, and there is white hair on the pale spots of all the segments. The face, instead of the two oblique spots of *sackeni,* has a large black interantennal mark, reaching below the antennae and there nearly straight across. The vertex is fully as high as in *sackeni,* and has a band in front and behind two submedian, and farther back a median dark mark. The pronotum has three dark stripes, not reaching in front of the transverse furrow, the median one broader behind, and there including a pale spear-mark; near the front margin are four faint, dark spots. The thorax is spotted with pale and dark much as in *sackeni,* but on the mesoscutellum are three very prominent shining black spots along its hind border, each on an elevated area; on the metascutellum the apical median spot is also shining black and elevated. The pleura are pale, spotted with dark. The legs are marked much as in *sackeni,* with long white and some black bristles; the fine hair is mostly black. The wings are marked very much as in *sackeni,* and the venation is generally similar, with a wide apical area, but the radial sector arises more basally, and there is but one series of cells between the cubitus and the anal in the fore wings.

The male genitalia are extremely short, and not at all extended, less than one-half as long as the last segment, but there is a lobe below at base as in *sackeni.*

Expanse, 48 mm.

From Palmerlee, Arizona, June, July, (Biederman).

Type, M. C. L., 12043.

Readily separated from *H. sackeni* by the three shining black spots on the Mesocutellum.

ON THE GENUS ELIDIPTERA SPIN. (HOMOPTERA)

BY F. MUIR,

Hawaiian Sugar Planters' Experiment Station, Honolulu, T. H.

Elidiptera Spinola 1839, Ann. Soc. Ent. Fr. viii, p. 304. Logotype, *callosa* Spin.

Among some Homoptera forwarded to me by Mr. C. B. Williams from Trinidad is a specimen that I at first considered to be a new genus near to *Achilus* but later identified as *Elidiptera callosa* Spin. or a very closely allied species. I was acquainted with this genus by species from North America and the West Indies and so failed to recognize *callosa* as belonging to it.

The genus was erected for *callosa* and some other species and was illustrated on plate 15, figures 2, 3 and 4 of the same work. The figures indicate that *callosa* differed from the other two species, *advena* and *marginicollis*.

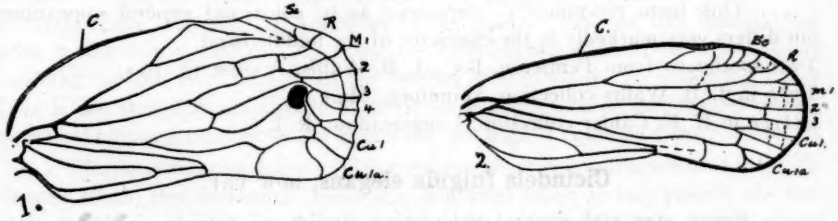

Fig. 1—*Elidiptera callosa* Spin., right tegmen; fig. 2—*Elidiptera* (?) *woodworthi* Van D., right tegmen.

Text figures 1 and 2 illustrate the tegmina of *E. callosa* and *E. woodworthi* and show the difference between them. In the former Sc and R fork near the base and R is simple. M. forks about the apex of clavus, and there are five apical Ms. In the middle of the apical third of the tegmen there is a round callus which causes the apical third of the tegmen to curve, the upper surface convex and the lower concave. This throws all the apical veins out of the straight, especially the Cu_1 and M_{3+4}. The effect of this is to give the tegmen a twisted appearance indicated by its generic name.

In *E. woodworthi* Van D. the tegmen and venation is of the normal Achilid type, the tegmina overlapping when at rest and the veins are but slightly curved or bent but not twisted. The fork of Sc and R is further from the base and R has three apical veins. The first fork of M is well beyond the apex of clavus and has three apical veins.

In *E. callosa* there is one pronotal carina on the shoulder, in *E. woodworthi* there are two.

For these reasons I do not think that they can remain in the same genus.

Some of the species at present under *Elidiptera* Spin. will fit into *Angeleusa* Kirk. and have a distinct median carina on the clypeus. Other species, such as *E. woodworthi*, have no median carina on clypeus and I am uncertain of their correct position.

NEW CICINDELAS OF THE FULGIDA GROUP. (COLEOP.).

BY EDWIN E. CALDER,

Longmeadow, R. I.

Cicindela azurea, new species.

General form of *fulgida* but somewhat larger and a little more elongate. Above deep bluish green with strong metallic lustre. Beneath bluish green; surface of the abdomen, legs and thighs very thickly clothed with white hairs; legs deep blue. Maculation; humeral lunule wider than in *fulgida*, unbroken at the shoulder, longer, almost reaching the middle band. The middle band uniform in width, reaching the margin, not dilated thereon and only very slightly prolonged backward. The descending portion of the band longer and more drooping than in *fulgida*, closely approaching the apical lunule. Length, 13 mm. Width, 5 mm.

This form resembles *C. parowana* as to color and general appearance but differs very markedly in the character of the middle band.
Two specimens from Penticton, B.C., J. B. Wallis, August 13, 1909.
Type in J. B. Wallis collection, Winnipeg, Man.
Cotype in E. E. Calder collection, Longmeadow, R. I.

Cicindela fulgida elegans, new var.

Form, size and general maculation similar to *fulgida*. Above deep chestnut brown with distinct metallic purple lustre. Beneath, lower part of the abdomen deep greenish black; upper part, extending from sternum to the head, copper bronze, more pronounced on the sides of the thorax. Markings very similar in character to *C. parowana*. The humeral lunule uniform in width, unbroken at the shoulder, less oblique than in *fulgida*, longer and more drooping extending almost to the middle band. The middle band shorter and less angular than in *fulgida*, extending to the margin, largely dilated thereon and prolonged backward but not to the marked degree as in *parowana;* the descending portion of the band elongate and drooping, closely approaching, but not quite reaching the apical lunule.
Length, 12 mm. Width, 5 mm.
Westbourne, Man. J. B. Wallis, August 14.
Type in E. E. Calder collection, Longmeadow, R. I.

Cicindela fulgida subnitens, new var.

Similar in size, form and maculation to *fulgida*. Above, dull black, much less metallic than *fulgida*. Beneath wholly black, without any tendency to greenish.

This form may possibly be only a color variety of *fulgida* but the decided departure from the type as noted in the black color of the under surface deserves recognition.
Lincoln, Nebr., F. N. Schoemacker.

NOTES ON NORTHERN BRITISH COLUMBIAN COLEOPTERA.

BY MRS. W. W. HIPPISLEY,

Terrace, B. C.

Terrace is a small town situated on the Grand Trunk Pacific Railway in the fertile valleys known as Lakelse and Kitsumgalum, ninety-five miles east of the terminal at Prince Rupert and 500 miles northeast of Vancouver. The two valleys are separated by the Skeena River, that called Lakelse lying to the south and Kitsumgalum to the north; taken together they number some 200,000 acres, Lakelse being the larger of the two. The soil is varied, a stiff clay on the flats, sandy by the river and gravelly on two large plateaus. The district is heavily timbered with spruce, hemlock, cedar and cottonwood, some yellow pine and yellow birch, and a sprinkling of balsam fir; some of the older clearings are overgrown with poplar and birch saplings, alder, elder, and willow.

Most of the insects collected during the past two years have been taken on or near our ranch "West Lodge," some three and one-half miles southwest of Terrace as the crow flies, or six miles by the road. Most of this material has been forwarded to Mr. C. A. Frost of Framingham, Mass., to whom I am indebted for the identification of the species mentioned in the following notes. It is hoped that they may prove to be of some slight interest and value, coming as they do from a country so far north and one almost entomologically unknown.

Elaphrus riparius Linn. In two years collecting on the south side of the Skeena River, this handsome insect has only been taken in two places; the first time on the margin of a small pool on a flat some 50 yards distant from a spring creek, where they were driven from cover by treading about on clumps of a fine sedge while searching for water beetles, about the first week in June, 1920. Ten days or so later they were found in some numbers on a part of the garden, behind the house, that had been flooded throughout the spring by the water from a small swamp. This stagnent water supported a thick growth of algae and when the water failed this algae with myriads of tadpoles formed an evil-smelling scum that dried in flakes, beneath which were found the *Elaphrus*. Both garden and pool were in the full glare of the sun.

From comparison with the types in the LeConte collection, I am informed that many specimens of this series agree with *punctatissimus* Lec. while others are more like *similis* Lec. in shape. Among these taken near the garden were a few that were of a red-bronze tint, instead of the usual green; these specimens are also slimmer with narrower thorax and of a shining brassy color beneath, less green on the femora, metasternum smooth and shining, ventral segments less hairy, punctation beneath less deeply impressed and more scattered, especially toward the apex. As this insect somewhat resembles *pallipes* Horn, it may be the form described from B. C. as *purpurans* by J. F. Hausen (Can. Record of Sci. IV, 1891, p. 251) and listed as a variety of *pallipes*, but the Terrace specimens do not have the legs paler than in *riparius*, while the elytral apices are not narrowed, nor is the punctation of the propleura and sides of abdomen as sparse as in *pallipes*.

Elaphrus clairvillei Kirby. Two specimens of this species were taken

about the same time, and they are identical with the eastern specimens of this species.

Elaphrus clairvillei frosti new var.

This very pretty insect differs from Kirby's *clairvillei* in its narrower thorax with median and sub-apical impressions more deeply indented, and with the discal elevations more sparsely and finely punctate, while the under surface is less coarsely punctate and the side sutures less sinuate; the front of the head is narrower and the eyes proportionately larger; elytra not so shining, with the punctation very fine, scattered, and not in wide rows between the discal foveae as in *clairvillei;* the color of the entire upper surface is deep, rather dull, olivaceous green (almost exactly as in *olivaceus* Lec.) with smaller purplish foveae; under surface a lighter shade of green; tibiae and femora colored much as in *clairvillei,* with the tarsal joints slightly darker. The specimen at hand measures 8 mm. while a specimen of *clairvillei* is slightly over 9 mm., and is of a much more robust form.

This strikingly distinct form, which seems almost to merit a higher standing than a mere variety, is dedicated to Mr. C. A. Frost in recognition of his great assistance to the writer. The type is in his collection.

Pterostichus herculaneus Mann. This species is one of the first beetles found in the spring, when it is present in small numbers, perhaps two or three at a time, beneath the loose bark of cottonwood logs and stumps, and under the bark of partially decayed hemlock and yellow birch. In autumn their habits are slightly different, as they then seek shelter for the winter in powdery dry stumps, dry rotten logs (hemlock or poplar preferred), at the bases of moss-covered cottonwood stumps, or under a sunken mossy log. They occur at times with *Iphthimus opacus* in decaying logs or beneath loose bark. The species is not very plentiful and one could perhaps take a dozen in a day by diligent search.

Hydrobius scabrosus Horn. A few specimens of this beetle were taken in May, 1920, from beneath moss growing at the edges of a rapidly flowing creek. The temperature of the water is about 45 degrees Fahr. both in summer and winter. The moss is partially submerged and grows on sunken logs, branches and twigs that have fallen into the water. The beetles are not seen until the moss is pulled off and laid on the bank upside down, when they commence to crawl about. On March 29, 1921 (since writing the above note) while there was still two feet of snow on the ground, four more specimens were taken from this moss after being gathered in the creek and carried to the house.

Eros simplicipes Mann. About half a dozen of this pretty Lycid were taken on the wing, the last of May, 1920. The flight is weak and wavering, about six feet off the ground, and they are easily captured by hand. They often light on the dress or hand of the would-be captor as they dance about in sunny glades among the green timber on still warm days. The red of the elytra has a distinct orange tint quite noticeable when compared with examples of *hamata* or *aurora.* The quadrate impressions of the elytral intervals are very even, the costae fine; the tibiae and femora are red, the tarsi black as are the antennae, though the head and first joint of the antennae have a reddish tinge. Length

of male 12 mm. My correspondent writes me that these specimens are identical with those so named in the LeConte collection.

Eros nigripes Schæffer. With the preceding species were taken five specimens having the legs, antennae, head and under parts black throughout; antennae broader and heavier; color of elytra deep scarlet, with the quadrate impressions of the intervals irregular and uneven in size, costae much coarser and the form broader than in *simplicipes*. Length 9 to 10 mm. There is one specimen of this species in the LeConte collection at Cambridge, Mass., without name. A specimen of this has recently been sent to Mr. Charles Schæffer of the Brooklyn Museum who states that he cannot see that it differs from his *nigripes* which was described from Minn. (Jour. N. Y. Ent. Soc. Vol. XIX, 1911.) except in the slightly weaker thoracic costae.

Eros hamata Mann. Four specimens of this handsome species were taken in 1920, usually while resting on the trunk of a green spruce. The quadrate impressions in this species are thickly covered with short appressed hairs of the same color as the elytra and thorax; the legs are red and the tarsi piceous; the head, first antennal joint and metasternum dull red; ventral segments black except the last which is brownish yellow. Length 15 mm. The specimens correspond with those named as above in the LeConte collection.

Lucidota (*Ellyschnia*) *corrusca* Linn. This is extremely common here all the season, being one of the first insects to appear after the snow melts, and one of the last to go in the autumn. It is very partial to the flowers of the pearly everlasting.

Silis spinigera variety *munita* Lec. One specimen was taken in June, 1920, on the flowers of the red osier willow or dogwood.

Silis pallida Mann. Three specimens taken; two flying about fire-weed blossoms and one resting on a thimbleberry leaf, June to July, 1920.

Calopus angustus Lec. Seven specimens of this rare Oedemerid were taken in the early part of the spring of 1920, five being taken before all the snow had melted. These were all found beneath the loosened bark on decaying pine stumps from which they seemed to have recently emerged as fresh holes were noticed in each case close to the swell of the roots. A week or so later one was found drowned in a tub of rain water by the door early in the morning. It seems probable that its early appearance in spring together with the indications that it flies at night, may account for its rarity in collections. The seventh specimen was taken from the water tank of a gasoline engine.

Omosita discoidea Fab. Two fragments of the knuckle-end of a beef shank yielded upwards of one hundred of these little insects during a space of about three weeks at the end of May and beginning of June, 1920. They crawl into the fine bony net-work and can scarcely be seen until breathed upon. When the bone is sharpely tapped on a board or table they fall out. Only bones having this net-work of fibre seem to attract them. In this species the yellow markings of the elytra are sub-basal to median instead of apical as in *O. colon*. *Discoidea* also has scattered flecks of yellow toward the elytral apices.

Leptura aspera parkeri new var.

Form longer and slimmer, elytra reddish-testaceous (of a shade similar to that of some of the redder forms of *Brachyleptura rubrica* Say) with the punctation much finer and the asperities not so pronounced, tips rounded and margined; the head is more sulcate with finer punctation, with the first four joints of the antennae more shining, not so coarsely punctate or hairy as in the black form, fourth joint two-thirds the length of the third and the two together but slightly longer than the fifth. Two of the abdominal segments have the apical margins glabrous with a cross band of yellow-brown, last segment brown with a fringe of yellow hairs. Length 14 mm. Width 3 mm.

This form has been given the varietal name *parkeri* in honor of the author's father whose keen interest in the insect fauna of this region has been a great encouragement to the writer. The type has been placed in the collection of Mr. C. A. Frost of Framingham, Mass.

A FURTHER NOTE ON THE GENUS PLATYPREPIA (LEPIDOPTERA)

BY J. MCDUNNOUGH,

Entomological Branch, Ottawa.

It had been my intention to consider the matter of the family position of the genus *Platyprepia* closed with the publication of Dr. Dyar's reply (Can. Ent. LIV, 20) to my previous statements (Can. Ent. LIII, 167). Unfortunately however an 'Author's note,' inserted by Dr. Dyar in the page proofs of his article and set up by the printer without consultation of the editor, calls for a reply as the statement contained therein is erroneous. Dr. Dyar claims in this note that, whereas in *Platyprepia* veins 7 and 8 of secondaries are separated at the base, in *Arctia* they are united, and he would use this apparently as a character to differentiate the two families Arctiidae and Hypsidae. It might be pointed out in passing that if this character should be used, then *Apantesis* and numerous other Arctiid genera would fall into the latter family. However, as a matter of fact, vein 7 in *Arctia* does not coalesce with 8 to the extreme base of the wing; it branches off from 8 about 2 mm. from the base in exactly the same manner as is found in *Platyprepia;* in both genera it is much reduced in size as compared with 8, which is greatly swollen at the base, and this reduction of size has been carried almost to obsolescence in some specimens of *Arctia caia;* an examination of a series of this species, especially large females, clearly shows however the basal separation of the two veins and I have specimens before me as well marked in this respect as any of *Platyprepia guttata.*

While I have no objection to the transference of *Platyprepia* to the Hypsidae if sufficient proof of the soundness of this transfer can be given, I do claim that up to the present neither Sir Geo. Hampson nor Dr. Dyar has given us satisfactory reasons for making such a change.

NEW SPECIES OF THE SYRPHID GENUS CHILOSIA FROM CANADA (DIPTERA)

BY C. HOWARD CURRAN,
Orillia, Ontario.

(Continued from Page 20)

Chilosia orilliaensis, new species.

Eyes pilose; arista black, bare; thorax deep blackish green, its dorsum cupreous bronze; abdomen shining blackish green, first two segments chiefly opaque; wings clouded or infuscated with dark luteous; scutellum with bristles which are scarcely distinguishable in the male owing to long pile; third antennal joint small, reddish, black above; abdomen of female almost wholly shining.

Male. Length 8 to 10 mm. Face and front shining greenish black, thinly covered, except the tubercle, an area on its lateral slopes and the cheeks, with fine whitish pubescence which is condensed as a band below the antennae; side margins with whitish pile, face elsewhere without pile; in profile very slightly concave or almost straight to the tip of the large, rather prominent nose shaped tubercle, thence shortly concave to the oral margin, which is convex, not quite as prominent as the antennal base and much less prominent than the tubercle. Frontal triangle a little prominent, in the middle with a more or less distinct brassy tinge; in the middle with a rather broad longitudinal depression which is narrower above; margins very narrowly white pollinose; pile of frontal triangle rather stout, long, black. Antennae luteous or brownish luteous, first joint always darker, third joint about equal in length to the first two, small, little longer than broad, its lower end usually more sharply rounded. Arista long, slender, bare, black, the sub-basal quarter a little swollen. Vertical triangle dull black, black pilose in front, yellow behind, sometimes nearly all black or with chiefly yellow pile. Eyes brown or yellowish brown pilose on the upper half with yellowish or grayish yellow pile below. Posterior orbits narrowly white pollinose on lower two-thirds, with opaque black pollen on the upper half except against the eyes at the upper three-quarter area; the pile is white on the lower half, more brown or blackish above and the hairs ovrhanging the eyes are black.

Thorax and scutellum shining blackish green, the dorsum, except the sides, with a cupreous bronze reflection. Pile variable, but usually chiefly black on the dorsum, intermixed with some yellow or fulvous hairs on the disc, sometimes almost wholly black pilose, but often the pile is chiefly yellowish or fulvous with the borders black pilose; there is always black pile at the humeri, base of the wings and on the postalar calli; pile on the upper half of the pleura almost always wholly black, but sometimes a few pale hairs intermixed, the lower half always whitish pilose. Scutellum usually with almost all long black pile, with a few paler hairs at the base but these sometimes wanting, at other times chiefly yellow pilose with black pile apically. In these latter specimens the scutellar bristles are usually quite distinct. The other bristles on the thorax are not conspicuous in the males.

First abdominal segment more or less brownish, scarcely or moderately shining, the angles below the scutellum reddish brown, and often the anterior margin more or less yellow pollinose; if shining, with a greenish reflection. Sec-

ond segment opaque black, the anterior margin very narrowly shining, the side margins, more broadly in front, shining greenish; third segment opaque, the apex very narrowly shining, and apparently inclined to be reddish in some specimens, lateral margins shining greenish, expanded in front to occupy about one-third the width of the segment on each side, but the shining area indistinctly defined. Fourth segment wholly shining, and usually with a metallic bluish reflection, but sometimes metallic blackish green. Hypopygium shining blackish green, finely, sparsely whitish pubescent and with mixed yellowish and black pile. Pile of the abdomen moderately long, on the basal angles long pale yellowish, yellow or fulvous, the sides of the abdomen with similar colored pile to that on the basal corners, except the apical quarter to half of each segment, the light colored pile extending as triangles on the basal corners of each segment; pile elsewhere black or brown.

Legs shining greenish black; tips of the femora, anterior four tibiae except a broad band mostly beyond the middle, yellow; apex of hind tibiae and first two joints of middle tarsi reddish, brownish yellow or brown; anterior tarsi brown basally in most specimens. Wings strongly tinged with brownish or brownish yellow, more so anteriorly; veins brown; stigma yellow. Squamae yellow, tinged with brown, with brown margin and brown fringe. Halteres luteous, the tip of the knob brown.

Female. Antennae reddish, basal joint usually brownish, third joint larger than in male, brownish above and apically its end truncately rounded but frequently more pointed below. Face moderately concave between the antennal base and the small but prominent tubercle, only slightly concave below the tubercle. Front shining black, with a brassy reflection in the middle; a shallow longitudinal median groove usually indistinct just after its inception a little above the antennae, running to the ocellar triangle; lower quarter of front silvery white pollinose contiguous to the eyes, above which the sides of the front are black. Pile of the front usually nearly all yellowish with black pile across the ocelli, some black hairs intermixed above the antennae, the vertex with yellowish pile. Posterior orbits thinly grayish pollinose above, white below.

Thorax and scutellum shining blackish green, the dorsum with a more or less distinct brassy or bronze reflection. The pile of the dorsum is short reddish yellow, on the pleura long, white; postalar callosities with two black bristles, two to four short ones above the base of the wings, and rarely a long slender one on the posterior part of the mesopleura; scutellum with short white or pale yellow pile and from four (usually six) to eight long slender black bristles on the apical margin.

Abdomen shining blackish green or blackish; first segment with the corners below the scutellum reddish luteous; second segment with an obscure opaque area on the anterior three-fourths occupying about one quarter the width of the segment, or less, on each side of the middle and often interrupted longitudinally by a shining median line; third segment with a similar but smaller subopaque marking, but sometimes there is scarcely a trace. Pile on the abdomen yellow, on the base and the lateral segmental triangles usually whitish; the antero-lateral more smooth triangles are limited by a condensation of subappressed yellowish pile; on the apical half of the disc of the third and fourth segments the pile chiefly appressed black, but the yellow hairs which are intermixed are most prominent.

Legs as in the male but the bands on the anterior four tibiae are narrower and brownish, the basal three joints of the anterior four tarsi are reddish. Squamae white, with white fringe. Halteres yellow. Wings as in the male, but frequently more clouded beyond the middle anteriorly.

Holotype, ♂, Orillia, May 8, 1921. *Allotype*, ♀, Orillia, May 22, 1921, collected by the author, in the Canadian National Collection, Ottawa.

The descriptions are drawn from 57 ♂ and 81 ♀ specimens, taken at Orillia between May 5th and June 18th, 1920 and 1921 and one male, Ottawa, Ont., May 22, 1921 (J. McDunnough).

The species shows considerable variation in the color of pile, antennae and legs, and also the facial tubercle is more or less variable. Occasional females have the oral margin more prominent than described, but this varies and intermediate specimens occur. The shape of the third joint of the antennae varies especially in the females. In many specimens the end of the third joint is more produced below, while in others it is rounded rectangular and narrower, being not twice the width of the second joint at its broadest.

This species is very close to *hoodiensis* Bigot, but is at once distinguished by the lighter pile of the face and the paler pile generally. In *hoodiensis* the thorax is black pilose. From *borealis* Coq. it is distinguished by the lighter antennae, bare arista and opaque abdomen. From *occidentalis* and *petulca* by the paler antennae, darker pile on thorax and abdomen as a rule and abscence of hairs on facial slopes. In Hunter's key (Can. Ent., vol xxviii, p. 229) the female traces out to *laevis* Bigot but is readily distinguished by its larger size, etc.

A very abundant fly on Cowslips, fairly abundant on Wild Cherry in the vicinity of deep woods and on flowers of *Osmorrhiza claytoni* in sub-swampy woods. The most common species of the genus in Ontario. Other species are frequently taken in company with it. Males are most abundant towards evening.

Chilosia columbiae, new species.

Antennae small, arista bare, black; eyes yellow pilose; thorax wholly light yellow pilose; second and third abdominal segments more or less opaque; legs black, only the knees obscurely reddish.

Male. Length 11 mm. Face shining black, thinly covered, except the tubercle, with yellow pollen which forms a broad band across below the antennae and extends narrowly down along the eye margins to the cheeks; side margins short yellowish pilose. Front not prominent; a deep sulca rising just above the polished antennal arch and reaching quite to the juncture of the eyes; in color metallic blue, with wholly yellow pile; front densely punctulate in vicinity of sulca, the sides obscurely golden yellow pollinose. Antennae brown, shining; third joint about twice as broad as second, a little longer than broad, its end rounded, in color opaque yellowish red, its upper and apical border brown, dusted with whitish. Arista black, bare, longer than antennae, slender, the basal quarter a little thickened. Vertical triangle shining greenish black its pile yellow, but most of the hairs blackish on the anterior half. Posterior orbits yellow pollinose and with yellow pile, including the occipital ciliae. Eyes moderately densely yellowish cinereous pilose, whitish below.

May 26, 1924

Thorax and scutellum shining blackish green, the dorsum with a strong brassy reflection, pile luteous yellow, not long but rather dense; pleura and scutellum with similar pile, no trace of bristles.

Abdomen metallic blackish green, slightly brassy; first segment moderately shining, the corners under the scutellum brown; second segment opaque black, except the very narrow posterior margin and the sides broadly, the opaque area cut off nearly squarely at the sides; third segment with a rather broad abbreviated opaque band near the hind margin in the middle, but with a very slender shining median stripe interrupting the opaque longitudinally; the opaque outline is vague; anteriorly and contiguous to the opaque markings and extending across the anterior margin there is a metallic deep blue reflection. Pile on opaque areas short, black, elsewhere longer, yellowish.

Legs black, the knees obscurely reddish. Pile of the legs similar to that of thorax; decidedly short reddish beneath the femora and tibiae apically and beneath the tarsi; a patch of golden pubescence at the bases of the anterior four femora. Wings distinctly fuscous, more marked basally and anteriorly, almost hyaline posteriorly; veins brown; the tip of the fourth vein joins the third longitudinal at almost a right angle. Stigma yellow. Squamae pallidly yellow with yellow border and pale yellow fringe. Halteres brownish luteous, the knob brown.

Holotype, ♂, Cranbrook, B.C., May 8, 1920, (C. B. D. Garrett), in the writer's collection.

This species is very like *C. lasiophthalma* but the pile is lighter, the face is less produced downwards, and the abdomen is more elongate. It must closely resemble the male of *punctulata*, but the thorax is not densely punctulate, the arista is wholly black and the thorax is very shining. It must also be very similar to *sororia* from Mexico, but the brassy thorax will distinguish it from that species. It differs from *petulca* in the abscence of bristles on the scutellum.

Chilosia rita, new species.

Arista bare; eyes bare; thorax and scutellum yellow pilose, the latter with black bristles; wings with yellowish brown cloud.

Male. Length 10 mm. Face and front shining blue black, a grayish pollinose band below the antennal prominence; side margins with short whitish pile; tubercle large, Roman nose shaped; face sub-triangularly concave from tip of antennal prominence to tip of the tubercle but the lower half of the concavity formed is convex; below the tubercle perpendicular to the oral margin, the anterior tip of which is on a plane with the posterior oral cavity. Frontal triangle with strong metallic blue reflection, with a broad sulca rising at the antennal arch and reaching the eyes at their juncture, the pile moderately long, black, not longest above. Antennae brownish red, first joint black, third joint as long as the first two together, oval, a little flattened above; arista long, slender, a little thickened near the base. Posterior orbits grayish yellow pollinose below, opaque black above, below with sparse whitish pile, above with black, but at the vertex with short yellow pile, the orbital ciliae black. Vertical triangle black pilose, the hairs at the back yellowish basally. Eyes contiguous for long distance, the vertical triangle small and narrow.

Thorax and scutellum shining blackish green, the dorsum with a brassy

lustre, the pile luteous, on the sides of the dorsum and on the mesopleura black, moderate in length, longer on the scutellum which bears apical slender black bristles.

Abdomen shining greenish with a brassy reflection; first segment with about six transverse impressions; second segment opaque, the side margins, expanding in the middle and extending obscurely (subopaque) entirely across, shining; third segment similar, but the middle of the segment less opaque and the shining band less broadly subopaquely interrupted. Pile of the abdomen reddish yellow, paler on the sides. Hypopygium with some black hairs intermixed.

Legs black; tips of the femora and all the tibiae reddish yellow, the latter with a rather broad blackish band, tarsi yellow, the last joint and hind basitarsi except the tip, brownish. Legs with long pale yellow pile, the anterior four femora with black pile apically and fulvous pile antero-ventrally, hind femora with short bristle-like black pile beneath.

Wings clouded with luteous, veins mostly piceous, but brown posteroapically; stigma yellow. Base of 2-3 longitudinal vein with about 12 short, fine bristles. Squamae whitish yellow, fringed with luteous and with luteous fringe of pile. Halteres yellow, the knob darker.

Holotype, ♂, Orillia, Ontario, May 5, 1921, (C. H. Curran) in the author's collection.

Differs from the species of the *tristis* group in having bare arista, and in addition may be distinguished from the species in that group as follows: from *pallipes* in having no pale markings on thorax; from *tristis, similis* and *leucoparea* in its more extensively yellow legs, etc; from *skinneri* in its larger size and largely black legs.

Chilosia rita, new species.

Antennae luteous, arista brown, bare; face with fine pile on slopes; front as long as face, not sulcate.

Length, 7.5 to 8 mm. al. 7.5 mm. ♀ Face and front shining black, the sides of the face and across below the antennae silvery pollinose, extending very narrowly up the sides of the front on the lower fifth; face considerably concave between antennae and prominent tubercle, and thence perpendicular to the oral margin which is only slightly below the eyes at its anterior point; face with very fine whitish pile on lower central slopes and short silvery pile on side margins; front with short whitish pile below, with longer black or brown pile on upper two-thirds and immediately above the antennae and a few scattered black hairs among the pale ones; posterior orbits white pilose below and with whitish gray pollen, black opaque above with black pile. Eyes bare antennae reddish yellow or luteous, the basal joints infuscated, third joint a little darker dorsoapically.

Thorax, scutellum and abdomen blackish blue, wholly shining; thorax chiefly short black pilose, but when viewed from in front appearing whitish; there is a triangular area of yellowish pile on the front of the dorsum, the pleura entirely whitish pilose. Scutellum with brownish yellow or brownish pile, appearing pale in most lights, its margin with three or four pairs of black bristles, and some stout black hairs laterally; postalar calli and the sides of the dorsum before and behind the suture with two to four black bristles, and

one to three bristles on the mesopleura. Abdomen wholly sparsely whitish pilose, pile a little longer basally, sub-appressed except on the anterior angles of the second, third and fourth segments. Femora black, their tips luteous; front coxae obscurely luteous, as well as a spot on the thorax above them extending to the partly obscurely luteous humeri. Anterior four tibiae luteous or yellowish with broad, ill-defined median blackish bands, hind tibiae paler at ends only; tarsi obscurely luteous, the apical joints darker; hind tarsi more brownish.

Wings almost hyaline, stigma pallidly yellowish; veins brown, yellow at base of wing; first posterior cell acute, last section of fourth vein a little bent at its basal fifth. There are five minute bristles on R_{4+5} before the furcation. Squamae white, with whitish fringe; halteres yellow.

Holotype, ♀, Macdiarmid, Ont., June 7, 1921, (N. K. Bigelow), in the Ontario Museum, Toronto.

Paratypes, ♀, same data, in the Ontario Museum; ♀, same data, in the writer's collection.

This species is distinct from any so far described from North America in having the eyes bare and the facial slopes pilose. It belongs to a distinct group, although its general structure places it close to the *tristis* group.

AN APPEAL FOR AID.

The following letter which has been received by the Secretary of the Entomological Society of Ontario speaks for itself.

DEAR SIRS:—The "Mikrographische Gesellschaft" has been in existence in Vienna for ten years and has at present about 50 members.

Its object is to popularize microscopy or rather those branches of the natural sciences which rely upon the study of the universe in the smallest space. At the same time it extends and affords opportunities to non-members to whom the use of our laboratory, consisting of five rooms, is offered gratuitously.

Through the extreme decline in the value of Austrian currency its finances have come into a most critical state. Before the war the society was able to cover its expenses and the upkeep of the laboratory out of its modest income. But our means are now exhausted and we are unable to procure even the most urgent expedients, such as instruments, reagents, colours, glass articles, photographic supplies, etc., the prices of which have arisen enormously, not to mention the increased cost for gas and electric current.

Without prompt assistance the society will soon be obliged to dissolve and to deprive the intellectual people of our unhappy city of a place of scientific study and research.

The unfortunate, poorly nourished intellectual classes of Vienna are facing a winter of hardship and privation which acts as a spur to seek education and enlightenment with a view of paving the way for a better future for themselves, and, let us hope, for the benefit of all mankind. We therefore beg leave to appeal to you, Gentlemen, who are pursuing similar noble objects, to make it possible for us, through an accommodation in your own sound money, that our society may be saved and continue with its work.

Please accept our heartiest thanks in advance.

We are, Gentlemen, gratefully and sincerely yours,

MIKROGRAPHISCHE GESELLSCHAFT WIEN,

Treasurer; Paul Frenzel, Vienna vi, Theobaldgasse ii.

Mailed May 26th, 1922